interesting results. All parts of *Coprinus* and other fungi exhibit distinct polarity, so that when parts of stems or pilei are grafted in their normal position on the corresponding parts of other individuals used as stocks, union readily takes place by anastamosing of the hyphae. When the part used as the scion is inserted in the reverse position, no union takes place. In partly resupinate forms, like *Polystictus*, polarity was exhibited in the same sense, but portions near the margins showed polarity to a less degree than the older parts.—H. HASSELBRING.

Lagenostoma.—This paleozoic type of seed, the first to be connected with Cycadofilicales, has been investigated further by Miss PRANKERD[16] from preparations of *L. ovoides*. The *Lagenostoma* type of seed has peculiarities that are hard to relate to the structures of the more modern gymnosperm seeds, and any additional knowledge of the facts is welcome. The structures revealed by these new preparations are described in detail, and some interesting "theoretical suggestions" are made. The seed investigated strengthens the suggestion of OLIVER and SCOTT that the outer fleshy layer of the cycadean testa represents the cupule of *Lagenostoma*, the stony layer being developed after fusion of the *Lagenostoma* integument with the cupule. The method of pollination is discussed also, and the curious supposition that extraneous water must be brought to the pollen chamber for the swimming sperms is continued. The facts in reference to the peculiar "crevice-like" pollen chamber are somewhat cleared up. It is shown that the contact of the "central cone" with the outer layer of the nucellus is quite variable, so that apparent continuity might be developed in a variety of ways. The point of this is that a preparation showing a space below and continuity aboves does not prove necessarily that the pollen chamber is being formed from below upward. In certain specimens this very appearance was observed and yet there were pollen grains in the chamber. It is not even certain that the crevice-like chamber was continuous around the central cone. The specialized apical portion of the nucellus is called the "lagenostome," and the suggestion as to its morphology is very interesting. Miss PRANKERD sees in it a modified apical annulus, which in the fossil *Seftenbergia* is a multiseriate structure, but which in living forms has become simpler. If this be true, we have a fern connection for the structure that seemed to be hopelessly advanced, namely the seed.—J. M. C.

The foliar ray of dicotyledons.—BAILEY[17] has followed up his previous work on the rays of certain groups by a more comprehensive study of the dicotyledons, resulting in some important conclusions. The primitive angio-

[16] PRANKERD, THEODORA L., On the structure of the paleozoic seed *Lagenostoma ovoides* Will. Jour. Linn. Soc. London **40**:461–490. *pls. 22–24. figs. 3.* 1912.

[17] BAILEY, IRVING W., The evolutionary history of the foliar ray in the wood of the dicotyledons, and its phylogenetic significance. Ann. Botany **26**:647–661. *pls. 62, 63.* 1912.